

Jonathan Ive (JI)/ June 8, 2008 Cupertino

There are few designers whose work is so closely associated with a single company that it's impossible to imagine that company's products without them. Jonathan Ive's work at Apple, including the iMac, the iPod, the iPhone, countless desktop and laptop computers, and now the Apple Watch, has made him arguably the most influential designer of our time.

In 2007 I was invited by Apple's graphic design department to screen *Helvetica* at the Apple campus in Cupertino. As a lifelong Apple user (we got an Apple II+ at our house when I was 14) it was a big honor. The following year, when I had the idea for *Objectified*, I knew that the film would only be complete if Jony was part of it. Through some friends I'd made at Apple, and a lot of patience, I managed to secure the interview. I was also honored to be the first filmmaker ever allowed to film inside Apple's design lab.

Funny sidenote: the airline lost some of our filming equipment on the flight to San Francisco. With no time to buy replacements, we were forced to go to Home Depot and construct our own DIY substitutes, like a microphone boom pole made out of PVC pipe and duct tape. Let me tell you, we felt pretty silly walking into the most design-centric company in the world with our crappy, makeshift "gear." But it did the job, and I guess that's all that really matters.

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Gary Hustwit — What have you got here on the table?

Jonathan Ive — Basically what we've got are some of the stages we go through to make the MacBook Air.

GH — Maybe we can start by talking about the manufacturing process?

JI — Sure. We had a really clear goal designing the MacBook Air, and that was to try to design and build something that was not only remarkably thin but also very rigid. Those two things usually don't go together very well. Traditionally how you solve that problem is that often you have an internal structure and then you have an external shell, which actually contributes much less to the overall structure of the product than you would imagine. What we've been working toward is removing a ton of those parts and all the inherent risk, inaccuracies, weight, and complexity, and trying to solve the structural issues with fewer parts. The real breakthrough we had that enabled the MacBook Air is that the structure of this product is almost

entirely derived from this palm rest. This palm rest is the backbone for the entire product. Normally when you have a palm rest, you cut this great big hole that makes it completely hopeless in terms of having any structural integrity. What we discovered was that, instead of one big hole, if we machine a whole bunch of small holes, the structure remains largely intact.

This part actually starts out as this extrusion. So this is an aluminium extrusion that goes through multiple operations, most of them CNC machined operations, to end up with this part. So you can see there's just a dramatic transformation between this raw blank and the final part. What's fantastic about aluminium is that, at each of the different stages we go through, we're harvesting the material we're removing; we are actually recycling all that material. What we end up with is a part that has all of the mounting features, all of the bosses, all of the undercuts. They're all integrated. So this is just one part, but this one part is providing so much functionality, and this really does enable this product. I don't know, as a designer, how you can design a product like this without becoming intimately involved with all the processes to make this one part. This isn't just about building a model and just hoping and stamping your feet; just belligerence isn't going to get you there. It's about taking the time to thoroughly understand.

It's interesting: we look at a finished object, we look at a physical product, but the design of this in many ways wasn't the design of a physical thing. In many ways, it was figuring out process; it was figuring out all the processes that would eventually enable this. And by definition, if you're doing something that hasn't been done before, if you're trying to solve problems in a new way, you don't have a precedent that you can refer to. So much of the effort behind a product like the MacBook Air was experimenting with different processes. This is completely nonobvious, but the way that you hold this to get from this blank to this part—there is an incredibly complex series of fixtures to hold this part in the different machine stages. And we end up spending a lot of time designing fixtures. So we are designing physical objects that hold a component to eventually enable this product.

And that's what I love about what we do. In a way, you could say you're designing a process for an object; then that object defines a whole slew of other processes for the users of that object. If you design an object in a certain way, you're designing the way that we'll hold it, the way that we'll use our hands. You can be working on what can seem like very abstract parts of the problem that you eventually realize will culminate in the object. It's certainly been my experience that the more profound and significant your innovation, it's just a requirement, a necessity that you get involved in a depth and a level that you would never dream exists.

GH — It totally makes sense that you spend as much time designing the methods that you are going to use to manufacture the object as designing the actual object. It's all intertwined.

JJ — Yeah, that's why I'm still struck by how hard design seems. It's just ... this is really complicated. In some ways, the products that were developed years ago—because production in high volume was so hard, I think there was a sense of reverence before you launched a new product. And I think that is one of the reasons that so many of the products that were designed many years ago seem to have an integrity and a significance that a lot of products now don't have. Today, as a designer, it's easy to get so far removed from the actual product. You can design virtually with sophisticated CAD tools, and prototypes can be made remotely. The actual product is usually manufactured on another continent. It used to be that the product was manufactured downstairs, and you would develop that product in such a fluid, natural, organic way with how it was going to be made. That's not the case anymore, but I think you have to make it the case if you're going to do something interesting.

We're just getting more and more disconnected from the physical, more and more disconnected from the product, so we end up being surrounded by ideas. They're sort of three-dimensional ideas, and some of the ideas are really compelling and interesting, but because there is nothing more than the idea, I think they just don't last. They don't work, and they very often don't solve problems.

GH — It's funny. This is a lot like conversations we were having with designers in *Helvetica*, because the same thing happened in typeface design. In the 1950s, you didn't just walk into a shop as an apprentice and make a typeface; you had to work for years to get to the point where your designs were deemed worthy enough to be cast in metal. The investment was just so huge to tool up and manufacture a typeface.

JJ — Yes, whereas now to develop and launch a product in volume is relatively easy. It's like pressing Command-P. It's like printing. The incredible rigor, significance, and gravitas aren't there anymore. That's why I think a lot of the products we're surrounded by, a lot of our manufactured environment, seems too easy and too superficial. There's an incredible disconnect between the designer and how the physical thing is being made, and there's a disconnect between the shell and the guts of the product.

GH — Are there benefits to the ease of designing and prototyping now? Does it help with experimentation, for instance?

JJ — I think that there are fantastic benefits to being able to prototype ideas. When sophisticated tools let you do something you could never have done before, that's fantastic. But those tools, if they're used superficially, all they really do is get you from one point to another point really fast, and then it just stops there. If you're not experimenting, and you're just using those tools to get things done fast and rush to launch a product, that's a tragedy. That is very, very sad.

GH — Can we talk about materials? Where does the inspiration come from in terms of what material to use? I don't know if here at Apple it's kind of like, "Oh, we're gonna use aluminum on this," and then you start machining, or sometimes do you see a certain material and say, "Oh, I know the perfect use for that"? Do you want to talk about that process a little bit?

JJ — You know, I think when we're designing a product, we start by developing the criteria for what we need a material to do, and so that would drive the way we think about our material selection. Very often, exactly what we want isn't available, so that sees us developing new materials or modifying existing ones. So definitely we see the necessity of the requirements of the product driving what we're looking at. But of course, also, we see materials that we find completely intriguing and seductive, and we sort of find out more about them. And so I think it happens in both ways, because very often we're trying to solve some very practical problems about, say, we want something to be small and durable, and we want something that may be transparent to radio frequency, you know? Or you're developing a phone with some very specific requirements of materials.

But again, it's an awful lot for us to just start with the material and understanding the material, not defining a form, and then sort of annotating the form and saying, "Oh, this will be wood, and this will be metal." You know, they're so closely coupled, what the material is and the form of it, and also the architecture of the entire product is a huge part of what we do. Just figuring out how a product's configured, how it goes together, that's a very big driver in where we end up. And that's not a constraint, you know? We don't see it as, "Well, this is ideally what we would like. Oh no, now we've got to figure out how we make that real." How do you actually make that a real thing? What we like is driven massively by how you would make it and how you would architect the thing. And again, I think that's a lot of what we try and do: see design in a broader sense. It's how a thing works, and I don't mean by the usual definition of "how it works." It's not just how it works for me as a user but what the product is. That's partly your experience of it as a user, but also a big part of what it is is how it was assembled and how it was made.

GH — What about form? Where does your inspiration there come from?

JJ — When it comes to form, I think we're mindful of a number of things. Definitely the architecture of the product and how it's going to be made. The materials we're working in play a huge role at a part level, and there's what the object is and what's just appropriate and what's just a truly simple, almost inevitable solution. And then what's inside a product has a big influence if you're going to try and be connected to the truth and honesty of the internal components. So for example, the first iMac that we made, the primary component of that was the cathode ray tube. And that was a big component, but the part of it that really had an impact on the external surface and form was the display, which was spherical. And so we would have an entirely different approach to designing something like that than the current iMac, which has a very thin, flat-panel display. So I think it's a mixture of things that really drive the way we think about form. What it consistently isn't is an arbitrary shape that we then try and figure out how to make and try and figure out whether the components inside actually bear any relationship to the shape, whether literally or at some sort of philosophical level.

GH — Can you show me the battery enclosure? Is that from the 15-inch MacBook Pro?

JJ — Yeah, I think it's right under here. So much of our achievement here is completely nonobvious. I mean, clearly one of our goals is to try and simplify, and that's not just applying a simple appearance. It's not putting a simple sticker over something that is inherently complex and sort of sloppy in its development. It's that we figured out a whole new way of building the product. We didn't accept the fact that it's been done this way for years; we developed a new architecture, a new way of building it. And the reason why simple is a good goal is that you get rid of clutter and you bring a sense of peace and calmness to the object. So you can focus on what really matters, and I think, with these products, there is a hierarchy of importance. You establish something as being important, very often, by removing distractions.

When you look at an object, there are so many prominent artifacts that are only there because apparently there wasn't a better way of solving the problem. But the amount of work that went into just developing the way you remove the battery on this product—there is this lever here that pops up that removes the battery door. You can see that we've laser etched the instructions for how to take the battery out there, and then there's this tab to take the battery out. But just the work on this, the enclosure itself, I mean, this is a big project. Right down to all the structure that you can't really see. This is sort of like finishing the back of the drawer. Whether you're going to see this or not, we would still do this. And we would be thinking, does anyone really see this? Does anyone really care? Does this really matter? I really do believe at some level that, when you touch and use a product that is the product of that obsession, I do think that in some way you do know about the care that went into it.

That's the one of the reasons we don't develop a huge number of products. We want to focus on a few things but go into this fanatical, obsessive level of detail. It's like there are all these discreet, self-contained little worlds inside the product. And you can just get lost with the amount of detail and care you put in. It's really remarkable.

GH — And most people would just take that for granted.

JJ — I think that most people—they might not be consciously aware of it, but at some level, I think they are aware. And I think if you try and understand why we gravitate toward some products over others—somehow a product can assume some sort of significance in your daily life, and I don't think that that happens very often when the product is ill-considered or was developed as fast as possible to a price point. Those sorts of products don't ever assume that significance, you know? You don't end up loving them very much.

I think one of the things we're becoming really aware of right now is just how much design is about learning. It's just a huge part of the process. There's a group of us here that have been doing this together for a while now, and because we're at Apple and not working independently, we get to live with the consequences of what we do. So we get to learn, and sometimes that learning can be interesting and predictable and straightforward and exciting, and sometimes it can be pretty painful. I think products really benefit from you having to live with the consequences

of what you did the year before and the year before that. A lot of these innovations are based on something we've done previously, and then we get to extend it and explore it more thoroughly. But we needed that stake in the ground from what we did last time. We couldn't have designed this product if we hadn't figured out some of these core architectural problems and solutions that we were grappling with on the MacBook Air. Each victory affords a new understanding, and a new level of opportunity for the next challenge.

I think it's important that we don't just accept. I mean, why is simplicity a good goal? I remember sitting in a lecture, years ago, where somebody was talking about consistency between products. And it was just assumed that that was a good and glorious goal, that the products from one company should all look the same. I remember thinking that I understood the premise and I understood that there were some assumptions about that and that maybe, as a consequence, it's a pretty cool thing that they look the same. They all look the same because they are the fruit of the same people with the same design goals. But I remember thinking, I don't actually see the virtue in it. Consistency was really important; they talked about that a lot. But they didn't talk about the products being good or not, so all the products could have been consistently crap. But consistency was seen as this wonderful and noble thing.

We spend so much energy trying to find the essence and the very simplest form of an idea and the simplest way of solving a problem. And because it's hard, whenever something is hard, I think you're given pause to say, "Well, does this really matter?" Or, "Is this goal right? Is this as important as we clearly think it is?" So very often we get absolutely stuck trying to find that completely quintessential idea. I am absolutely convinced it's the right goal, even if it can be difficult to achieve. The product is inherently a complex thing; it's complex in how it was conceived and developed. So I think our simplicity, in some sense, is just the outworking of the way we develop the product and the way that it's built.

For example, we're surrounded by so much clutter when you actually stop and look. I mean, there are so many distractions, even within a single product. And I think it's really important to remove those distractions, to remove those things that are all vying for your attention. An example of that is the way we've developed indicators. An indicator has a value when it's indicating something. But if it's not indicating something, it shouldn't be distracting you; it shouldn't be there. So very often you've got an object, and there's all this stuff that's clearly of no use at that point in time, but it's still all distracting you. It's still competing for your attention. One of the ways we solved that problem here was that we figured out a way, with a laser, to cut these tiny, tiny holes in the surface of the aluminium, so that when the indicator is not on, you have no sense of these holes in the aluminium, but when the indicator comes on, then it's there.

That's one little example. When we cut these tiny holes, because of the ratio of the diameter of the holes to the thickness of the material, because of parallax, you couldn't actually see the LED behind the holes.

We spent months developing a bubble-jet printing process, essentially filling these microscopic holes with a resin so that you could remove the issue of depth and essentially bring the light readout to the external surface. That hadn't been done before, and I am very aware that that might sound a little bit fanatical. There are so many examples like that. But that's how you make something that just seems obvious and inevitable and simple, and I wouldn't expect anybody to point to that as a feature, but on some level you're aware of a calm and considered solution that therefore speaks about how you're going to use it and not the terrible struggles that we as designers and engineers had in trying to solve some of the problems.

That's quite obsessive, isn't it?

GH — Yeah, but like you were saying before, it lets the user not have to think about it.

JI — I mean, look at the features that are on here. If you look at other laptops that some of our competitors make, they have more than four feet on them because the bottom isn't flat. And rather than figure out how to make the bottom flat, it's easier to add another foot. But if there's an element on this product, it's because we really can't think of how to solve the problem in any other way. Like the fact that there isn't a button that you have to press to release the display. I love when you can add tremendous utility and solve problems by taking something away. We haven't added a feature; we've gotten rid of the latches. But again, that's not because of some abstract goal that we've got that speaks to our preoccupations. This is all in the service of trying to make a simple product, and in some senses, arguably, it's about getting the designer out of the picture. I think it's about deferring to the user. When you see this, you don't see a designer wagging their tail in your face. It's not about self-expression. It's not about trying to be different. It's about trying to solve problems and make a product that people like using.

GH — Let's talk about the iMac screen too. I like that story. Let's slide some of these parts over.

JI — This is the bezel for the iMac. This is made from a pressed, forged, and then machined aluminium part. When we were developing this, we were struggling to find precedent. Again, we found ourselves in this somewhat lonely place of not really being able to point to processes or parts where this had been done before to achieve this level of quality and to make it in the volume that we need to. But one of the stories of how we make this is, when we remove the aluminium for the display in the center here, we actually take that material, and then we can make two keyboard frames from it. So this is the primary part that then makes the keyboard that goes with the iMac.

GH — So taking what would normally be waste and using it to make something else.

JI — You can have the attitude about manufacturing that you need to be engaged so that you can police what will come out at the end, to make sure that your intent makes it through the development process. I think we see it as completely polar opposite to that. It shouldn't be a

necessary evil that you have to endure the process but that it's absolutely fundamental to what you do as a designer. It can't be this disconnected process that just has to happen. Time and time again, what we've found is, what you learn from being so connected and spending so much time in the actual process of making this stuff is not only that you increase your understanding of the material and the process to help what you do the next time; you also spot opportunities. When you see the material that we just removed to create the display, when you see that all stacked up, it talks to you very succinctly. Look at all that aluminium. Why don't we take that and make our keyboards from that material rather than just taking it right to be recycled?

I find that so much of what gets us excited and is so provocative and really gives us pause to think about the context of what we're doing is being so involved in the making. I don't know what design means; I don't know what designer means. I don't know where the design starts and stops and making starts and stops. We just make products, and that sees your involvement take so many different forms. But you can be consumed for two months trying to solve a problem relating to how to hold and fixture a part for machining, and nobody will ever know about that.

GH — But like you said before, somehow you'll get the essence of that. It's like closing the door of a really nice car.

JI — I think that's one of the reasons this design thing is so hard—because at one level, you're trying to solve problems that relate to the fundamental way in which you perceive an object. So you're dealing with stuff that's quite abstract and is not very tangible. On the other hand, we're preoccupied by magnetic force, so that the MagSafe connector will break away just at that right point, through to our thinking about what should the nature be of the sleep light. You know, you could argue that if it just blinked on and off, it would be doing its job. To have it breathe is much more complex and time-consuming, but there's a humanity to that, isn't there? Again, it's one of those funny things; you spend so much more time on something to make it less conspicuous and less obvious. And when you think about it, so many of the products we're surrounded by actually speak to the antithesis of that. They want you to be very aware of just how clever the solution was; it's just right in your face. And so much of what we're trying to do is to have our contribution to the product not be obvious, not be evident.

GH — But when you find those details as a user, it's like a treat; it's a discovery. The things that you find that are well done, that aren't obvious, when you understand the thinking behind them, it's like, "Wow."

JI — Yeah, and I think it's very interesting that when you first discover a little detail where there is a lot of care, then you do pay attention. But part of me thinks what you pay attention to—as much as it is the actual feature—is that somebody cared, that somebody gave a damn. And that's conspicuous, isn't it? "Look, they cared." That's one of the things that is interesting about that product. When you see it, you have a connection to who made it. That product does speak to the goals and the motives of the collection of people who designed and manufactured it.

GH — Can we talk about the iPhone a little bit? We'll probably have to use yours as an example. A lot of people in the film talk about interaction design, like, "What is good interaction design? Well, it's good if it works, and if it doesn't work, then it isn't." I'd like to get into those intangibles about what makes something feel natural to use.

JI — Right.

GH — And it also speaks to what we were just saying. Letting you do what you need to do with the object in the most direct way possible.

JI — Well, I think an object invariably defines an experience, even an object that you don't touch. When you see something, you're trying to figure out—of course, not consciously, but I think you're trying to place that object. You're trying to make sense of it. So even something you don't touch defines an experience, and it's engaging you and forcing you to try and come to terms with what it is. Those products that you touch, as the degree of interaction increases, the object and the user interface sort of combine to define your experience. And I think with the iPhone, from an industrial design point of view, I think we had a really clear sense of what the object needed to do and needed to be relative to that overall experience. Of course, you can't disconnect the user interface from the physical object, but if you aren't developing them in tandem and sympathetically, you can completely undermine things and end up with a product that just seems not clear. It seems confused.

GH — Maybe we can talk a little bit, just to carry on from that, about the way the interaction design works together with the form. It's not really about the form following the function anymore, because if you look at an iPhone, it could be anything. You don't realize that it's a GPS device, and it sends emails, and all these other things.

JI — I think one of the big challenges working with such sophisticated and technologically complex products is what you base the product's story on. If you go back 50, 60 years, normally the function of the product was a good place to start. For example, with a printing press or a chair, you understand the nature of those objects, and you understand their function because their function is reflected in their form. And the problem with an iPhone is you can't express, really, GPS and its mapping capability and its communication capability. There's not a specific formal story that you could construct that would help you understand that. And even if you could, one of the amazing things about the computer or the iPhone specifically is that it's constantly changing its primary function, which is pretty remarkable if you think about it.

So we have to construct a story and look to the different attributes of the product, and some of those attributes will be the materials it's made from and the form that's connected to those materials. Other issues would be, just physically, how do you connect to the product? So for example, with something like the iPhone, clearly the big story there formally is that everything defers to the display, because it's a huge percentage of the surface. Clearly it's the focus of the product; it's the focus of the interaction. And so what we start to do there is really establish a hierarchy, because you make that important by making other stuff unimportant by trying to remove clutter, trying to remove distractions.

So the formal story and the construction, the architecture, really does defer to the display. And in that sense, a lot of what we seem to be doing in a product like that is actually getting design out of the way. You know, the physical nature of the product really should be at the service of something much more important. You know, that's not an end in itself. The content, or what's on the display, is more important than the form of the product in many ways.

From a structural point of view, I mean, it's a really significant challenge to have a display that large, with such a large piece of glass that is going to be strong and robust. The glass is very hard. It's the hardest material we could find that was appropriate. Our preoccupation, right down to the structural architecture, was with this big display, so that drove so much of it. This bezel is one of the key structural parts; it's actually a forged stainless steel part that goes through multiple processes from forging to machining. But that enables the product to be this strong and this thin.

GH — Can we talk about working with software engineers on the interface design? You mentioned how one side is informing the other. Even the visual motions of the interface, like stretching an image on the screen, are meshing with the form of the object. How does the visual component to the interaction design and tie in with the physical form?

JI — So often I am struck by the collaboration that is necessary to produce incredibly complex products—the collaboration between an engineer with a certain expertise and a design team with an expertise through to a fixturing design expert through to the user interaction designers. You do sometimes get this sense of how important and how fluid the collaboration and the connection needs to be to make a product that will be cohesive, where you have a sense, at some level, of the big idea. There's a sense of alignment; you understand it. Sometimes it's remarkable that we can even begin to engage with these products at all. They are so sophisticated and so complex. I do think that part of the comfort and ultimately the affection we have for an object is because, at some level, we understand it. There's just a sense to it. That doesn't just mean that it's easy to use. It's deeper than that. Every component and every attribute is somehow meshing together to define the user's experience with the object.

I mean, the expertise that ranges from the software teams to the people developing the silicon for the central processors to the electrical engineers to the experts who are figuring out how to design the cutter that will be used in the CNC machines for mass production—the breadth and the depth of the expertise is fantastic. It's incredible to be a part of that effort, because ultimately the place where that all clicks, the place where each of those contributions are suddenly tangible, is with the object.

GH — Excellent. Do you want to talk about some of these other parts?

JI — Yeah, I was just going to show you a couple more stages. It's just under there, Gary. Just at the bottom of that pile.

GH — Got it.

Jl — So you can see what we've gone from. These are literally just a couple of the stages of how we make the MacBook Air, going from the extrusion to rough cutting. This is for the keyboard well. You can see that, at one of the stages, we've started removing some of the material from the underside of the palm rest and then actually created some of the boss features. There is a remarkable efficiency and elegance and beauty to just how much a single part can do, and one of the things that we try and push ourselves on is, how can we do the job of those six parts with just one? And you get into some really interesting trade-offs, but at a certain point, it makes complete sense.

GH — Can you talk about the tactility of objects, these objects in particular? People think of interaction design as the software, but much of it is what you are actually feeling in your pocket when you aren't even paying attention to what you're doing with it.

Jl — It's really interesting. It's hard to talk about just those attributes of an object that define what it's like to touch and hold, because it can sound so trite. Well, we can measure in a very sophisticated way the torsional rigidity of something. And one of the reasons it really matters is that you know when something just has that structural integrity to it. So your experience of a product like this is partially its form. And in many senses, it's the material and the structural architecture that will define your experience, whether you think this is a nice thing to touch and hold.

GH — Even something like how round the corner is and these little details.

Jl — You know, there is that sense when you define an object—perhaps this is way too esoteric, but you could argue that you're defining the way that you hold something; you're defining a physical process. Because it's this shape, we define the way that it will go in and out of your pocket. One of the specific examples on the iPhone is the way you change the ringer switch. It goes . . . sorry, I was just checking my messages.

GH — Ha!

Jl — The ringer switch actually moves in this direction, between having the ringer on or off. You could argue that it would be more intuitive to switch it up and down, but we noticed that when you put it in and out of your pocket, it would catch, and so inadvertently you'd be changing the mode of the ringer. And so I think it's fascinating, the way that, at one level, you are very deeply involved in the minutiae of how you make something, and at another level you are completely preoccupied by a surface and transitions and forms. And then at another level, you're trying to figure out what's the right mechanism and the right approach for a single switch.

GH — This is kind of a jump, but it seems like design is used as a selling point or as some sort of marketing tool now. Everything is "design." Like everything at Target is suddenly "designed." Well, obviously everything is designed, but what do you think of people using it as a branding term now?

Jl — I struggle to get my head around what that means when people are pushing that something's designed. Of course it's designed, and design

isn't important. What's important is good design. And I think many people are skeptical, if we have to say, "Design's designed," that it's really designed. With the sort of products that we develop and design and manufacture, I hope, in a way, that the solution feels almost inevitable, that it feels almost undesigned, that it feels almost like, "Well, of course it's that way. Why would it be any other way?"

GH — Are you a consumer of design as well as a producer of design?

Jl — No. I mean, I'm a consumer of objects. I'm not interested in who designed them and where they were made, per se. I'm just interested in the final object. And I don't own a lot of objects. Certainly not as would be typical of someone described as a consumer of design.

GH — I'm interested in what the objects we own, or buy, have to say about us. I'm interested in what that relationship is.

Jl — I think the objects that we buy do speak to the criteria that we have for the things that we think are important. But again, I think that, with the objects I buy, my interest in those would be very similar to the way we work here, which is about the way that they solve problems. I think products that you buy are different from, say, art.

GH — Unless it's design art? What about design art?

Jl — I'm so focused on what we're doing here and the issues that we're wrestling with. It's odd, but I don't really have much time to lift my head up from what we're focused on, the product that we're working on right now. So I guess one of the by-products of this is that you don't get distracted super easily. Developing and making really complex products is completely absorbing.

GH — But it seems like, with the current trend of design as art, most young designers that I see are somehow doing these things that are almost like one-liners. You can burn a chair or something, and that gets classified as design.

Jl — Yeah, I think when design becomes a one-liner, if it's a phenomenal one-liner, that's great. But, as we know, there is the danger that it might not be particularly good or work particularly well. And again, I'm really so absorbed by what we're trying to do, my biggest concern isn't that shift in the way that people approach and practice design. The shift that's occurred away from designers being intimately connected to the physical object is, I think, much more concerning for what our manufactured environment is going to be in 5 or 10 years' time. If the people who are defining our physical environment, our made environment, the made objects around us—if they don't really understand the real nature of objects, we're going to be living in some three-dimensional picture book that has no intrinsic depth or beauty. And again, I think this goes back to having to be very clear about what's the goal. What is it that we're trying to do? For us, it's not a photograph in a book, and it's not a product that's going to appear on screen. It is the physical product. I think we're still learning so much about what that really means.

That's what's so remarkable about the object: you know, when you see an object, you make so many decisions about its nature; you

immediately form a perception of what it is, what it does, how well it's going to do it, how heavy it is, how much you think it should cost. You immediately have a sense of it relative to history, to culture. You make so many assumptions about that object in seconds, and the physical object is then incredibly complex, ranging in issues from form to material to its architecture to how it connects to you, how you touch it, how you hold it.

GH — And just from a behavioral standpoint, the way that in the past 10 years—we can talk about Apple's products specifically, but look at how these products have changed the way we live.

JI — Yes, in the last 10, 15 years, we've seen the way that we've done things for, in some cases, many hundreds of years dramatically changed. And that can either be something where as consumers we're forced into that change, or we can be drawn and compelled to change. A good example is music, just being able to change the way that we consume music, you know, the way that we browse and buy and then ultimately listen to music. So much has changed in the last 10 years; it's absolutely remarkable. I think, as a designer, it's very important to be really aware of what's going on and the consequences of what you're doing. I think you can't help but feel really quite humbled by being involved in that process.

GH — Is there anything that you have always wanted to design that isn't in Apple's product range?

JI — I think a big definition of who you are as a designer is the way that you look at the world, and I guess it's one of the curses of what you do that you're constantly looking at something and thinking, "Why is it like that and not like this?" And so, in that sense, you're constantly designing, you know? You're constantly redesigning, very often. It can be really frustrating, because I do think that so much of our manufactured environment seems arbitrary and seems not very well considered.

One of the things I think is so interesting about the object is, of course, it speaks to what it is and what it does. Whether it's being considered or not, it speaks to all of those things. But also the object testifies to who put it there. It testifies to the people who conceived it, thought about it, developed it, manufactured it, distributed it. It speaks to a value system. Every object, intentionally or not, speaks to who put it there.

I remember the first time that I saw an Apple product, and I remember it so clearly because it was the first time I realized—when I saw this product, I got a very clear sense of the people who designed it and made it. It was the first time that ever happened to me. I was in art school in the late eighties, and I remember the connection to the product was quite remarkable. But what stayed with me was this sense that I really wanted to know who made it, because I just thought it spoke so clearly to a set of values and to a set of preoccupations, and I just wanted to know who those guys were that made that.

GH — I'm wondering, if two hundred years from now, when archaeologists are looking back at the objects of this time period, what are those objects going to say about us?

JI — I think that in a few hundred years time, when people look back at the products that are being produced now, on one level they'll think—I mean, my guess is that there will be the comment on the current state of technology, which right now we think is just absolutely remarkable, just breathtaking, but there will be that. I think also, as is always the case in archaeology, people are interested in the object, but they are terribly interested in how that speaks to society and terribly interested in how that means that we connect and relate to each other as well as the physical things around us. And I guess, somewhat sadly, I think there will also be a sense of just the huge amount of stuff that seems to have been developed with no more care than just trying to do something that's maybe a little bit new or a little bit cheaper but has no real substantial reason for existing. And unfortunately there are a lot of products around, I think, that are like that.

GH — You know, there's always this question of what's the future of design; what's next? I'm trying to get a feed on where these things are going. Industrial design now seems like it's branching out into many different things, like environmental design and interaction design and design thinking.

JI — I think if you wanted to get a sense of where design's going, what I would do would be to look at what's motivating designers. And if motivation is about trying to design a better product and actually not see design as a beginning and end but seeing design as just playing a role in that, you can get and predict one sort of future. If design is about huge design consultants trying to figure out another way of selling a design surface, ultimately the product of that activity is billable hours, and you're going to see a different future. If it's about self-expression and just the object being an embodiment of the designer, you're going to see another future. I have no idea where we're going to end up. I do see, though, less and less interest in young designers that I talk to in how you make a product, less interest in the actual object and in solving problems.

GH — Do you think consumers in general should be more critical about what they're given?

JI — I actually think consumers are discerning and very critical. I think as designers we let consumers down by not always providing great choice. But I actually do have an awful lot of faith in the people who we design for. I just wish that there was more choice. Actually, no, I don't wish there was more choice. I wish there were better alternatives.

GH — In the film, we may segue from you to Newson, so do you want to talk about Marc?

JI — I think, if you look at the way we practice design and the way Marc practices design, so much of it shares this same preoccupation with the physical object, with how it's made. You know Marc knows how to make his stuff too. It stems from this very direct connection with the object. What's so interesting is that our preoccupations are so similar, and yet we can practice design in very different ways. But the foundation is completely common—unnervingly so sometimes.

GH — Do you ever find yourself wanting to design an airplane?

JI — Nah. I'm happy.

GH — Okay, last thing: if you were going to teach a class on industrial design, what would be the first thing you would teach?

JI — It sounds so naive and so obvious, but it begins and ends with the object. It's a physical thing that is so remarkably complex but wonderful in how you can relate to it on so many levels all at once. But your obsession has to be with the object; you can't just live in a little virtual world and develop forms in CAD and then remotely prototype and manufacture something and expect that it will have any significance. A three-dimensional idea is not a product.

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